

**Translation**

**PATENT COOPERATION TREATY**

**PCT**

**INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY**  
(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

|  |   |   |
|--|---|---|
| Applicant's or agent's file reference<br><b>FP0002PCT</b>  | FOR FURTHER ACTION<br>See Form PCT/IPEA/416                     |   |
| International application No.<br><b>PCT/JP2004/008894</b>  | International filing date (day/month/year)<br><b>24.06.2004</b> | Priority date (day/month/year)<br><b>10.07.2003</b> |
| International Patent Classification (IPC) or national classification and IPC<br><b>C02F1/48, B01J19/08, F01P11/04, F02M27/04, H02K9/26</b> |   |   |
| Applicant<br><b>KANKYOKIKI CORPORATION</b>   |   |   |

|   |  |
|---|--|
| <p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of <b>10</b> sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input checked="" type="checkbox"/> (sent to the applicant and to the International Bureau) a total of <b>8</b> sheets, as follows:</p> <p><input checked="" type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p>b. <input type="checkbox"/> (sent to the International Bureau only) a total of _____, containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p> |  |
| <p>4. This report contains indications relating to the following items:</p> <p><input checked="" type="checkbox"/> Box No. I Basis of the report</p> <p><input type="checkbox"/> Box No. II Priority</p> <p><input checked="" type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p><input checked="" type="checkbox"/> Box No. IV Lack of unity of invention</p> <p><input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p><input checked="" type="checkbox"/> Box No. VI Certain documents cited</p> <p><input type="checkbox"/> Box No. VII Certain defects in the international application</p> <p><input checked="" type="checkbox"/> Box No. VIII Certain observations on the international application</p>   |  |

|   |                                   |
|---|-----------------------------------|
| Date of submission of the demand        | Date of completion of this report |
| Name and mailing address of the IPEA/JP | Authorized officer                |
| Facsimile No.                           | Telephone No.                     |

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

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Box No. I Basis of the report

1. With regard to the language, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
- ☐ This report is based on translations from the original language into the following language \_\_\_\_\_ which is the language of a translation furnished for the purposes of:
- ☐ international search (Rule 12.3 and 23.1(b))
- ☐ publication of the international application (Rule 12.4)
- ☐ international preliminary examination (Rule 55.2 and/or 55.3)
2. With regard to the elements of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:
- ☐ the international application as originally filed/furnished
- ☒ the description:
- pages 1-3 , 5-22 as originally filed/furnished
- pages\* 4-4/4 received by this Authority on 09.05.2005
- pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- ☒ the claims:
- nos. \_\_\_\_\_ as originally filed/furnished
- nos.\* \_\_\_\_\_ as amended (together with any statement) under Article 19
- nos.\* 2-4 received by this Authority on 09.05.2005
- nos.\* 1, 5-10 , 12-16, 18-23, 33-35 received by this Authority on 31.10.2005
- ☒ the drawings:
- sheets fig. 1-29 as originally filed/furnished
- sheets\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- sheets\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- ☐ a sequence listing and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.
3. ☒ The amendments have resulted in the cancellation of:
- ☐ the description, pages \_\_\_\_\_
- ☒ the claims, nos. 11, 17, 24-32
- ☐ the drawings, sheets/figs \_\_\_\_\_
- ☐ the sequence listing (*specify*): \_\_\_\_\_
- ☐ any table(s) related to sequence listing (*specify*): \_\_\_\_\_
4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
- ☐ the description, pages \_\_\_\_\_
- ☐ the claims, nos. \_\_\_\_\_
- ☐ the drawings, sheets/figs \_\_\_\_\_
- ☐ the sequence listing (*specify*): \_\_\_\_\_
- ☐ any table(s) related to sequence listing (*specify*): \_\_\_\_\_

\* If item 4 applies, some or all of those sheets may be marked "superseded."

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## Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non obvious), or to be industrially applicable have not been examined in respect of:

- ☐ the entire international application
- ☒ claims Nos. 6, 7, 15, 16, 18

because:

- ☐ the said international application, or the said claims Nos. \_\_\_\_\_  
relate to the following subject matter which does not require an international preliminary examination (*specify*):

- ☐ the description, claims or drawings (*indicate particular elements below*) or said claims Nos. \_\_\_\_\_  
are so unclear that no meaningful opinion could be formed (*specify*):

- ☒ the claims, or said claims Nos. 6, 7, 15, 16, 18 (see supplemental box) are so inadequately supported  
by the description that no meaningful opinion could be formed.

- ☐ no international search report has been established for said claims Nos. \_\_\_\_\_

- ☐ the nucleotide and/or amino acid sequence listing does not comply with the standard provided for in Annex C of the Administrative Instructions in that:

the written form ☐ has not been furnished  
☐ does not comply with the standard

the computer readable form ☐ has not been furnished  
☐ does not comply with the standard

- ☐ the tables related to the nucleotide and/or amino acid sequence listing, if in computer readable form only, do not comply with the technical requirements provided for in Annex C-bis of the Administrative Instructions.

- ☐ See Supplemental Box for further details.

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## Box No. IV Lack of unity of invention

1. ☐ In response to the invitation to restrict or pay additional fees the applicant has:
- ☐ restricted the claims.
  - ☐ paid additional fees.
  - ☐ paid additional fees under protest.
  - ☐ neither restricted the claims nor paid additional fees.
2. ☒ This Authority found that the requirement of unity of invention is not complied with and chose, according to Rule 68.1, not to invite the applicant to restrict or pay additional fees.
3. This Authority considers that the requirement of unity of invention in accordance with Rules 13.1, 13.2 and 13.3 is:
- ☐ complied with.
  - ☒ not complied with for the following reasons:

For the reasons given below, this international application is deemed to include three inventions that do not fulfill the requirement of unity of invention.

Main invention: Claims 1 to 5, 8, 9

Second invention: Claims 10 and 12 to 14

Third invention: Claims 19 to 23, 33 to 35

The inventions set forth in independent claims 1, 10, and 19 share the technical feature of providing a magnetic member for exerting, on a flow passage for a medium, a magnetic force substantially perpendicular to the direction of flow.

However, the provision of a magnetic member for exerting, on a flow passage for a medium, a magnetic force substantially perpendicular to the direction of flow is known in the art, as disclosed in document JP 2-131186 A (Kabushiki Kaisha Fuji Keiki, 18 May 1990), for example; thus, the technical feature common to the aforementioned claims does not constitute a "special technical feature" in the meaning of PCT Rule 13.2, and therefore, the inventions set forth in claims 1, 10, and 19 are not recognized as having a technical relationship involving one or more of the same or corresponding special technical features.

4. Consequently, this report has been established in respect of the following parts of the international application:

- ☐ all parts.
- ☒ the parts relating to claims Nos. 1-5, 8-10, 12-14, 19-23, 33-35

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**Box No. V** Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

## 1. Statement

|                               |        |                                |     |
|-------------------------------|--------|--------------------------------|-----|
| Novelty (N)                   | Claims | 1-5, 8-10, 12-14, 19-23, 33-35 | YES |
|                               | Claims |                                | NO  |
| Inventive step (IS)           | Claims | 1-5, 8, 9, 34, 35              | YES |
|                               | Claims | 10, 12-14, 19-23, 33           | NO  |
| Industrial applicability (IA) | Claims | 1-5, 8-10, 12-14, 19-23, 33-35 | YES |
|                               | Claims |                                | NO  |

## 2. Citations and explanations (Rule 70.7)

Document 1: JP 9-271782 A (Yugen Kaisha Matsu Fuji Kikaku), 21 October 1997, entire document

Document 2: JP 9-98553 A (Mitsubishi Motors Corp.), 8 April 1997, paragraphs [0020]-[0029], fig. 1

Document 3: JP 2-131186 A (Kabushiki Kaisha Fuji Keiki), 18 May 1990, entire document

Document 4: JP 2001-162282 A (Katsutoshi Yoshifusa), 19 June 2001, paragraphs [0031]-[0043], fig. 5

Claims 1 to 5, 8, 9, 34, and 35

None of the documents either cited in the international search report or newly cited herein discloses a flow passage for a medium wherein both a flow passage through which a medium for performing heat exchange passes and a flow passage through which a fuel medium passes are provided together, characterized in that a magnetic member for exerting a magnetic force substantially perpendicular to both of the aforementioned flow passages is provided, nor would this invention be obvious to a person skilled in the art.

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Box No. V

Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability;  
citations and explanations supporting such statement

Claims 10 and 12 to 14

Document 1 discloses a feature wherein the thermal conductivity of water is improved by subjecting water to be treated to a magnetic treatment using a magnetic water quality improvement device provided with three pairs of magnets that exert a magnetic force of approximately 1,200 to 1,800 gauss on the central portion of a conduit through which the water passes. Document 1 also indicates that said feature can be used in an engine radiator or the like. A person skilled in the art could easily conceive of subjecting the coolant of the water-cooled motor used in an electric vehicle, disclosed in document 2, to a magnetic treatment using the magnetic water quality improvement device disclosed in document 1, and thus, the invention set forth in claims 10 and 14 does not involve an inventive step in the light of newly cited documents 1 and 2.

Document 3 discloses a feature wherein water molecules in water to be treated are activated by passing perpendicularly across a magnetic field, and then the treated water is further activated by the resonance of the wavelength of infrared rays emitted from an infrared ray material with the absorption wavelength of the water itself. A person skilled in the art could easily conceive of providing the infrared ray material disclosed in document 3 in the magnetic water quality improvement device disclosed in document 1, and thus, the invention set forth in claims 12 and 13 does not involve an inventive step in the light of documents 1 and 2 and document 3 cited in the international search report.

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Box No. V

Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability;  
citations and explanations supporting such statement

Claims 19 to 23 and 33

Document 4 discloses a fluid magnetic treatment device wherein a maximum magnetic force of 2,800 to 3,300 gauss is applied to the inside of a water channel and the thermal conductivity of the treated water is improved. Document 4 also indicates that said device is not limited to use on water channels, but can also be mounted on the fluid flow pipes of different types of reaction devices. A person skilled in the art could easily conceive of providing the infrared ray material disclosed in document 3 in the fluid magnetic treatment device disclosed in document 4, and thus, the invention set forth in claims 19 and 20 does not involve an inventive step in the light of newly cited document 4 and document 3 cited in the international search report.

The invention set forth in claim 21 does not involve an inventive step in the light of documents 1, 3, and 4.

The inventions set forth in claims 22, 23, and 33 do not involve an inventive step in the light of documents 1 to 4.

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## Box No. VI Certain documents cited

## 1. Certain published documents (Rule 70.10)

| Application No.<br>Patent No. | Publication date<br>(day/month/year) | Filing date<br>(day/month/year) | Priority date (valid claim)<br>(day/month/year) |
|-------------------------------|--------------------------------------|---------------------------------|---|
| JP 2004-124918 A              | 22.04.2004                           | 01.10.2002                      |   |
| [E, Y]                        |                                      |                                 |   |

## 2. Non-written disclosures (Rule 70.9)

| Kind of non-written disclosure | Date of non-written disclosure<br>(day/month/year) | Date of written disclosure<br>referring to non-written disclosure<br>(day/month/year) |
|--------------------------------|--|---|
|--------------------------------|--|---|



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Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

The wording in claims 1, 15, and 34 describing "medium flow passages bound together" was amended to read "medium flow passages provided together," but simply describing a flow passage through which a medium for performing heat exchange passes and a flow passage through which a fuel medium passes as being "provided together" leaves the relationship between the two medium flow passages unclear.

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Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

Continuation of:

Box III

Even with reference to the entire description, the motor or water-cooled motor cannot be taken as one wherein both a flow passage through which a medium for performing heat exchange passes and a flow passage through which a fuel medium passes are provided together. Further, the description indicates that said motor is used in an electric vehicle, but it is not obvious from the description that said motor includes a hybrid engine.